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ENVISAT DDS - RECEIVER USER MANUAL

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1 INTRODUCTION

This document describes the procedures applicable for any DDS authorised User, for the correct operation and maintenance of any DDS receiving station of the type "Envisat Commissioning" (RX-PC).

In particular, this manual describes the user interface to the RX-PC under normal conditions and assumes a correct installation and commissioning of the receiving station following [1] and [2].

The manual provides also some normal maintenance verification actions, and some guidelines to diagnose receiver malfunctions and identifies the actions to be taken to support the remote maintenance support.

The RX-PC requires minimal User interaction to carry out its primary operational functions. The RX-PC acts as temporary file repository system for the host where the products will be processed and used further. It receives files via the satellite interface and stores them on a disk ready to be picked up by the user via the two available interfaces (HTTP and FTP-get). Optionally a process can be configured and activated under user's responsibility which forwards automatically the received files to a user's target computer using a standard FTP-put.

Under normal operations the RX-PC needs only minimal operator interaction. All monitoring and control is done by remote by the DDS operator. However, if the local network configuration is changed, then some local support may be needed.

It will be responsibility of the User to carry out all listed tasks periodically and to keep up duly note of the results.

2 REFERENCES

2.1 Applicable Documents

(None)

2.2 Reference Documents

[RD.1] APP-ADU-0102-029 Iss1-2 Envisat DDS - RX Site Requirements

[RD.2] APP-ADU-0103-043 Iss1-2 Envisat DDS - RX Site Installation Procedures

[RD.3] APP-ADU-0103-042 Iss1-1 Envisat DDS - RX Sites Install Verification Procedures

3 SW CONFIGURATION APPLICABILITY

This manual is applicable to the DDS V2.0 SW release of the Receive DataCast Application (RDCA), which relies on DataCast version 3.2.2, protocol version 2, RRMP version 3, Built: Jul 18 2001 07:09:56.

4 SYSTEM OVERVIEW

The satellite-based Data Dissemination System is currently mainly dedicated to provide the dissemination of Envisat data products during the Envisat commissioning phase.

The DDS is a major evolution of the EEM-A ERS/TPM data dissemination system and will share resources with this system. The sharing will be such that the DDS operational requirements and associated quality of service is always ensured.

For the commissioning phase, the Envisat DDS is based on two Ku-band uplink stations located at Kiruna and ESRIN, and a park of some tens RX operational stations. The transmission is based on a fully reliable transmission protocol based on an RRMP/IP-multicast transmission over a DVB/MPEG-2 SCPC satellite link, with a satellite link between 2 and 5 Mbps data rate.

The system is designed in order to allow expansion of both the number of Transmitting and Receiving stations. Also the design of the current system is based on a potential expansion of the satellite throughput link to a maximum of 8 Mbps without major modifications at any TX site, and none at the receive site.

4.1 Current Satellite Link Parameters

DDS is currently transmitting from Eutelsat W1 Satellite, Transponder F3, horizontal polarisation, carrier freq. 12622.5553 MHz, Symb. Rate 3.333 Msps, Fec ½.

Receive system description

The receive system located at user end for the commissioning phase is divided in two basic units. An external unit called also RX-RF and an internal unit, called RX-PC.

4.2 RX-RF

The receive RF unit is composed by a typical TV broadcast external unit. The current ESA-provided installation is based upon a Fracarro RO120N 120 cm single-offset antenna to achieve good link availability. A Norsat digital LNB type 4208B is used, because it provides both more signal gain and improved frequency stability. Note that in contrary to a universal LNB, the Norsat has a fixed LO frequency of 11.3 GHz and therefore does not switch to high band (neither with 22KHz nor with higher voltage).

Figure 1: Typical RX-RF external unit installation

The LNB shall be connected to the receive card in the RX-CU via a low loss coaxial cable of 30m maximum length. For longer path, a line amplifier may be required although it is recommended the use of a lower loss professional coax cable.

It is assumed the antenna to be accurately pointed in order to achieve full DDS performance. Routinely maintenance will be foreseen for BERs checking.

4.3 RX-PC/CU

The RX-PC/CU is a Pentium III 800MHz based PC running the Linux operating system. The chassis is a standard 1U rack mount. Size is W 44cm, L 49 cm and H 5 cm. Some clearance (e.g. 10 cm) would be needed in the rear, as the coax cable connection is in-line.

The Linux distribution is Mandrake 7.2 (based on 6.2 plus some patches and security enhancements) with kernel 2.2.14 (newer kernels are unfortunately not supported by the Broadlogic Linux driver). The system needs to have a minimum speed provided by the system components, therefore its configuration is currently:

- Pentium III 800 MHz, FSB100
- 256 MB of RAM
- Two SCSI storage controller: Symbios Logic Inc. (formerly NCR) 53c1010 Ultra3 SCSI Adapter
- One 18 (type 1) or 36 GB (type 2) IBM hard disk, model DDYS-T18/36350N, Direct-Access, ANSI SCSI revision: 03
- Two Ethernet controller: Intel Corporation 82557 [Ethernet Pro 100], 10/100 Mbps twisted pair autosensing.
- One Network controller: BROADLOGIC: 2030-16

The RX-PC/CU integrates the Broadlogic 2030-16 Satellite Express DVB receiver card, which performs the tuning/decoding/demuxing/decapsulation of DVB data streams into IP packets.

The RX-PC/CU runs the DataCast Linux receiver with DataCast version 3.2.2, protocol version 2, RRMP version 3, Built: Jul 18 2001 07:09:56, which allows full reliable multicasting of files. It implements two profiles, one specific for ENVISAT (-X1).

Each individual RX-PX/CU has a unique encryption key, which is used to obtain the product encryption keys. This key and the delivery of the product key to a specific UDP port makes the receiver unique in the network and ensure the delivery to and only to the selected destinations.

Upon completion of the product this product stays on the local disk and can be accessed by the user through a Web interface or via FTP. In addition LAN forwarding can be configured and activated by the User to automatically forward products via FTP to an external server (those forwarded products are automatically deleted locally after successful forwarding!). Finally, the receiver is provided with an utility to erase old files in order to keep enough disk space for incoming products.

Figure 2: Typical RX-PC 1U chassis.

5 INSTALLATION

This manual assumes that a correct preparation, installation and commissioning of the user station has already taken place following [RD.1], [RD.2] and [RD.3].

5.1 Installation Requirements

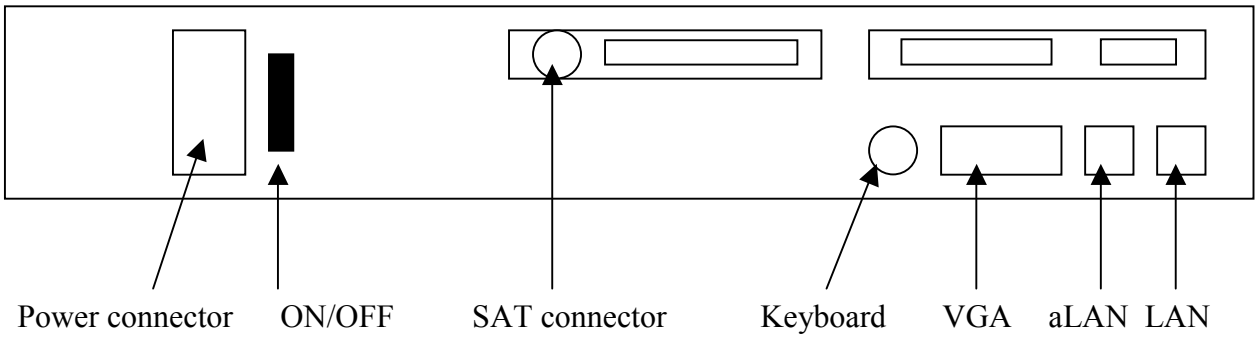
The **user site** has to permanently provide, for the correct installation and operations, to the DDS operations responsible, the following listed items:

- Maintain the antenna correctly pointed toward the selected satellite with feed oriented for the polarisation in use.
- Maintain the low loss coaxial cable with F-connector from the outdoor.
- Operational TP-Ethernet cable LAN connection (10/100 Mbit/s TwistedPair-Ethernet) with access to the Internet.
- Operational access from the Internet to the RX-PC via a public IP address [RD.1].
- Details about the any modification to the permanent IP connection to be assigned to the RX-PC, comprising:
  1. IP address
  2. net mask and broadcast address
  3. router IP address
  4. DNS server IP address

5.2 Installation procedures

The listed [RD.2] contains the installation procedure for the person of the Envisat DDS team authorised to install and correctly pre-configure the DDS receiving station of the type "Commissioning". Normally, it will be responsibility of that person to configure all listed items.

Therefore, only tasks to be performed regularly by the User for the correct operations are drafted in this document. However the basic information on the rear external interface connections is following provided.



Power connector: To be connected to a 220 V a.c. supply. To be noted that the system is configured to work with a continuity power UPS system. Therefore any loss of power is considered an exceptional event requiring manual intervention. In particular, the receiver set-up foresee a manual reboot after power restore.

On-Off switch: This switch may not be used without authorisation by the DDS operation responsible.

Sat Connector: F-type female connector to be used to connect the receiver, via the 75 Ohms coax cable to the LNB unit.

Keyboard: 6-pins mini-DIN connector for mouse and keyboard. Keyboard port must not be used in normal circumstances if not requested by DDS operations team.

VGA: VGA D-15P connector for screen monitor. VGA port must not be used in normal circumstances if not requested by DDS operations team.

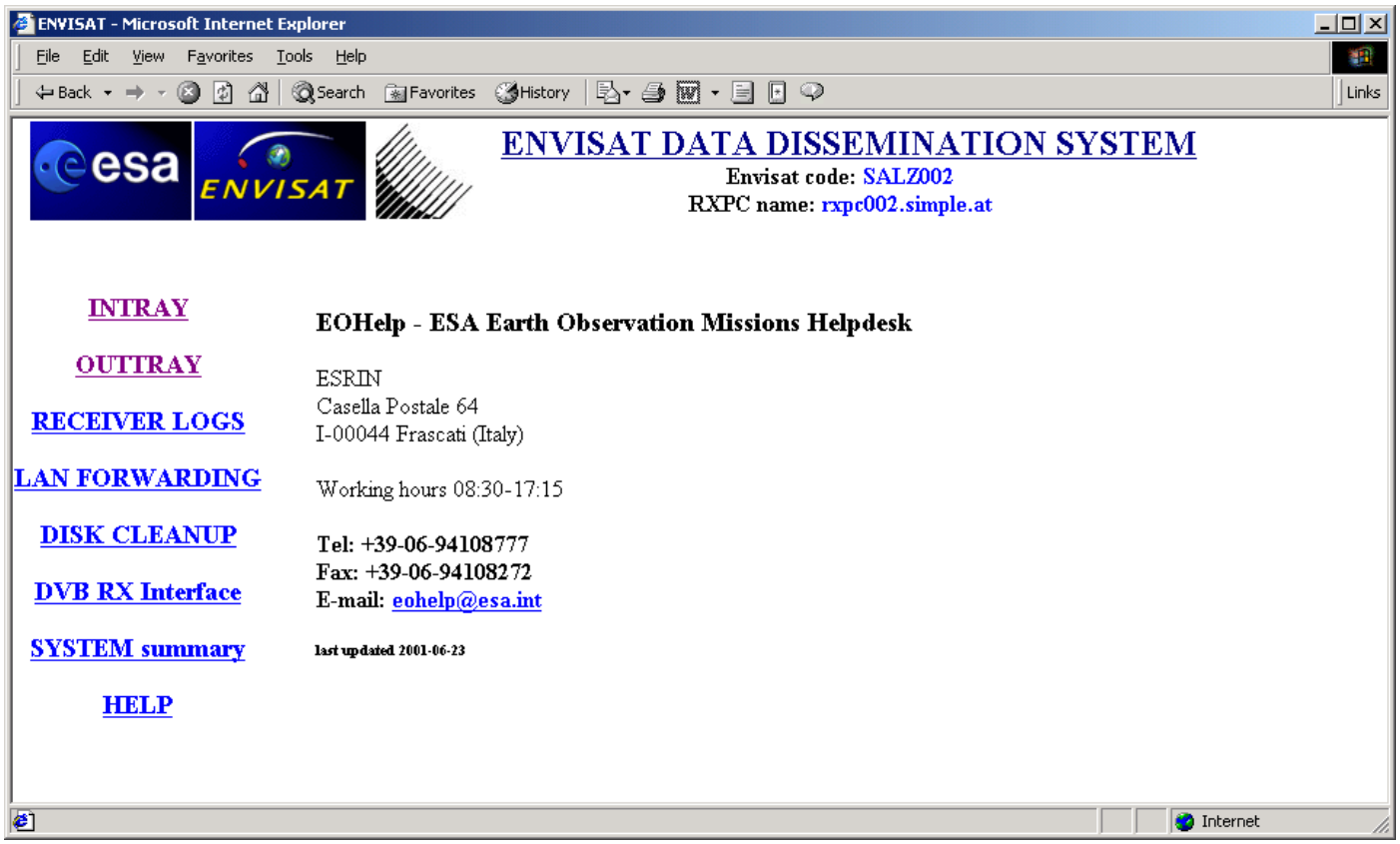
aLAN and LAN: RJ 45 connectors for local (aLAN) and external (LAN) Ethernet connections. The aLAN must not be used for other purpose than maintenance.

6 OPERATIONS

This chapter will provide information about the procedures to be followed to operate at Users's sites the RX-PC. The User shall be a person duly delegated by the User site and shall be responsible for any interaction with DDS Team or Helpdesk. He will take care of compilation of a operation log-book, making use of window dumps (CTRL-PrtScr), for any detected problem. This information shall be used to generate a problem report, where the window dumps have to be included.

For all the following actions, the User should connect to the RX-PC using a standard web browser pointing to RX-PC. Then he should login to the RX-PC as user **envisat**, password **4envisat0**. Once the system shall be accepted for operations, the password must be changed by the user, and the new password shall be given for record to the DDS operation.

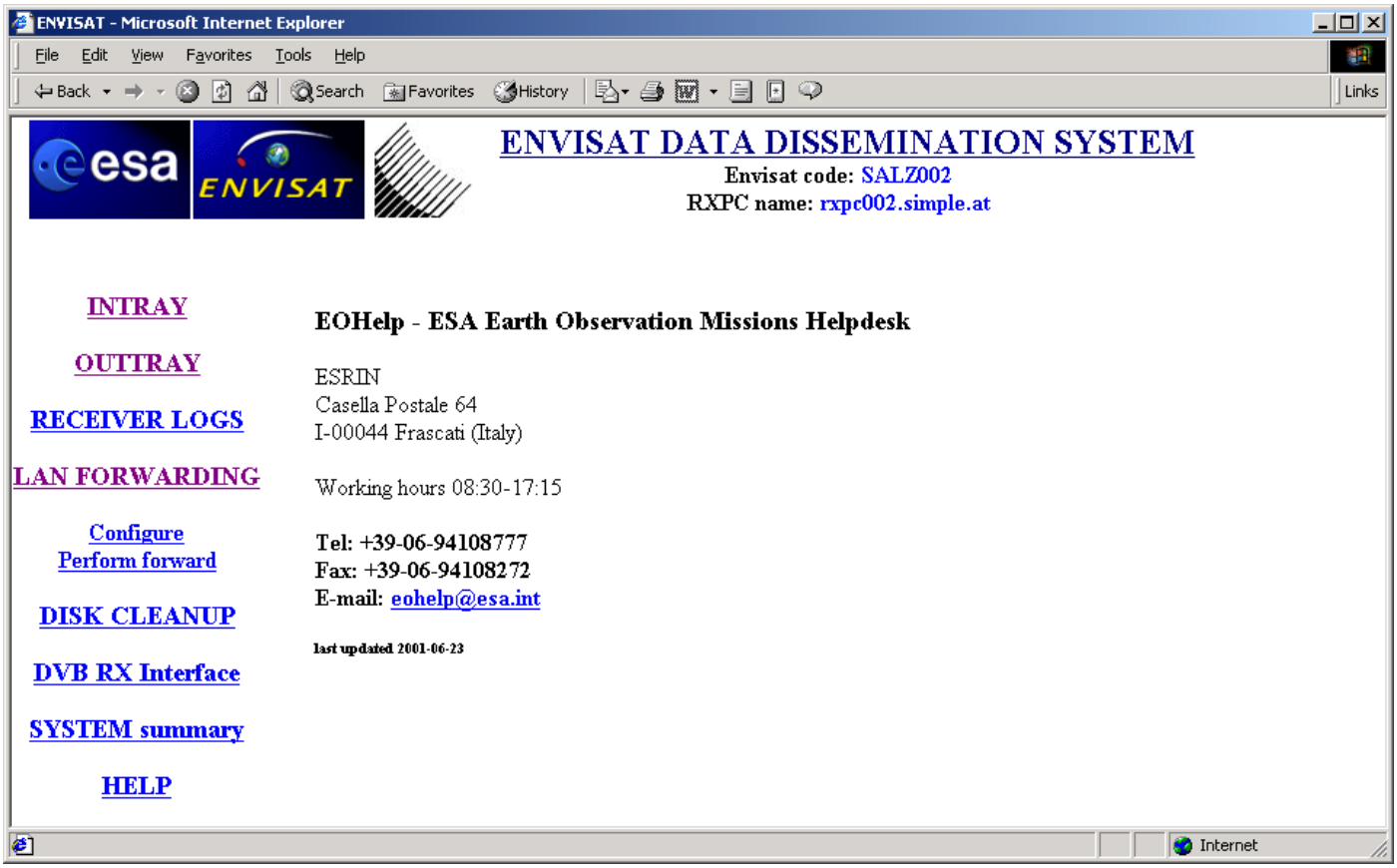
6.1 HTTP



In the **top frame** links to the respective home pages of ESA, and ENVISAT are accessible.
In the **left frame** the navigation is accessible.
In the **right frame** the contents of the respective command is visible.

Upon first connect, the service presents the ESRIN HELPDESK co-ordinates.

Note that the menu in the left frame some of the menu (OUTTRAY, LAN FORWARDING, and DISK CLEANUP) items are collapsed for readability. Upon clicking on the respective menu item, the menu sub items appear.



NOTE that the second line in most of the following pages contains a status line, where the most important operation modes are summarised:

- **DVB**=CHECK or OK
- **DISK**=CHECK or OK
- **LANFWD**=OFF or ON
- **CLEANUP**=OFF or ON

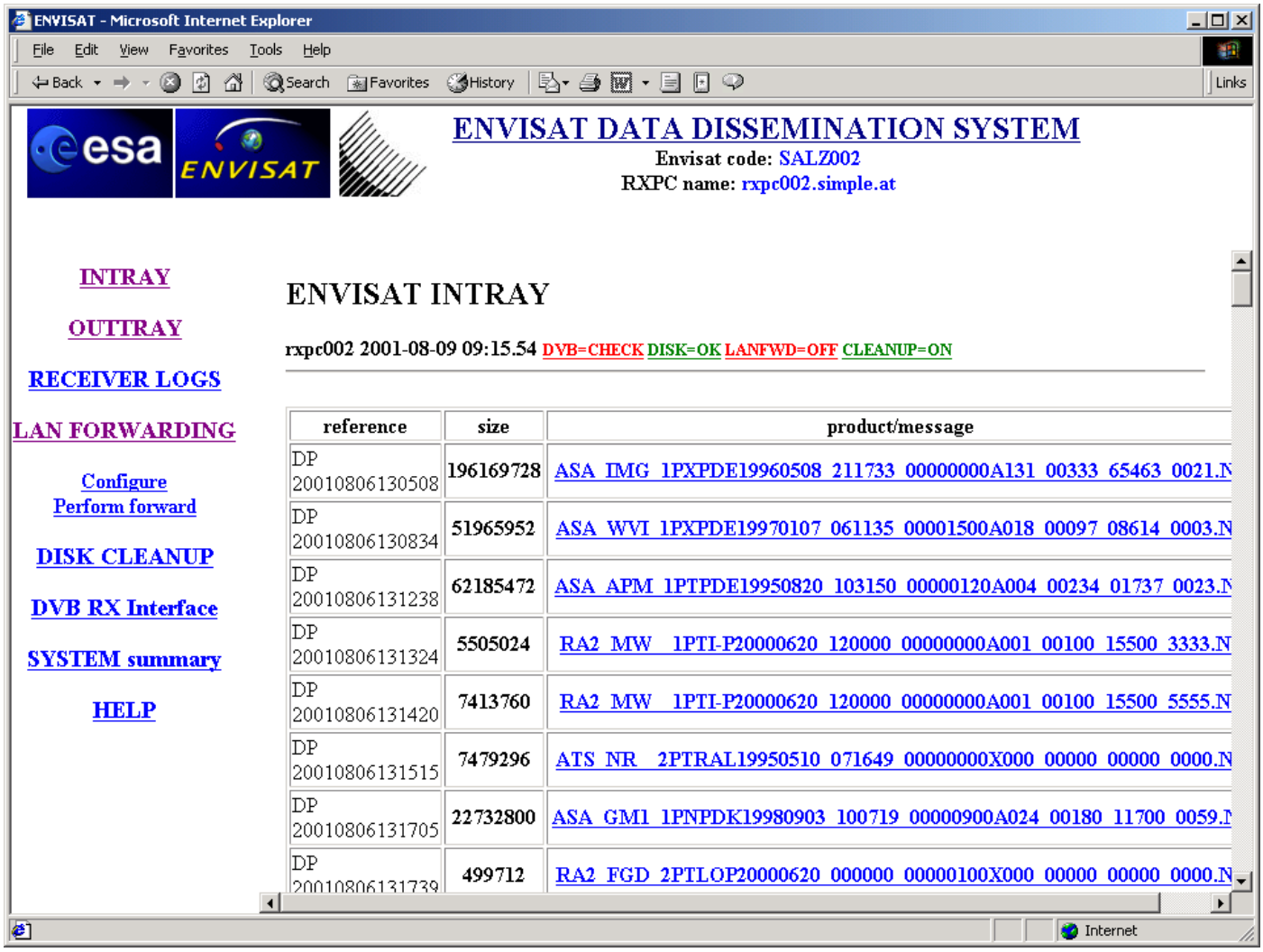
For convenience reasons the modes in green indicate OK, whereas red indicates that either some action is required or a mode is not enabled. The following example screen shall be interpreted as follows:

- The DVB status is red. This tells that no proper signal transmitted by the satellite is actually received by the RX-PC. This means that the DVB carrier is down or the RX-site has lost the signal due to antenna, LNB or cabling problems.
- The DISK status is green. Enough disk space is available for new products. If the DISK status is red then products need to be downloaded from the RX-PC and/or deleted in order to preserve space.
- The LANFWD status is red, indicating that this option is not enabled. Under LAN FORWARDING this feature can be configured, enabled and performed.
- CLEANUP status is green, telling that products older than a given number of days will automatically be discarded. Under CLEANUP this value can be configured.

6.1.1 INTRAY

Under INTRAY all products that have been received are viewed. Those which are still locally stored are linked to its local source and can immediately be downloaded.

Clicking **INTRAY** the user shall obtain the following screen:

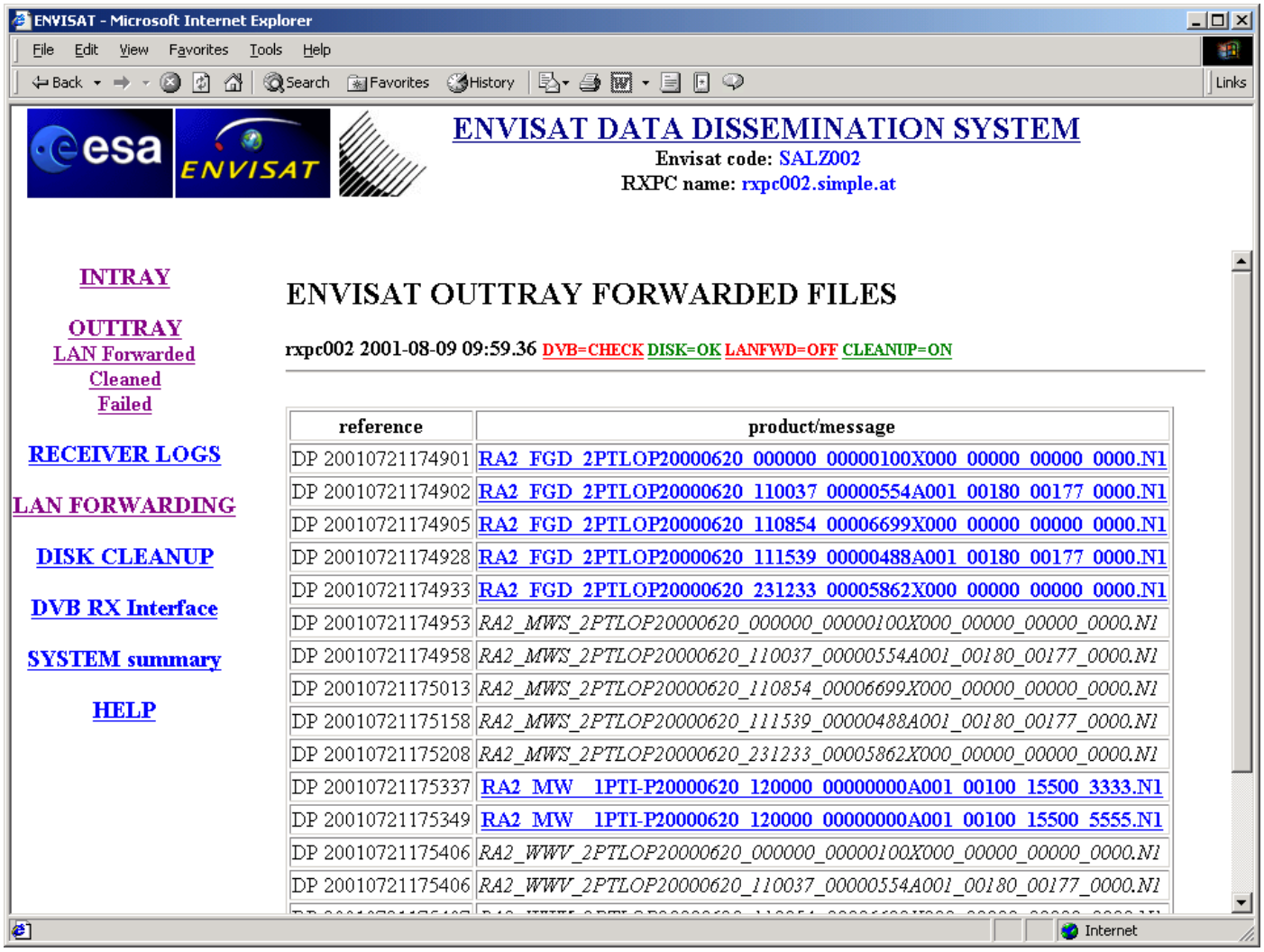


The table under the status line has three columns:

- **Reference**: provides a pointer to the transmission reference (channel type: DP-DB, date-time of data arrival: YYYYMMDDHHMMSS)
- **Size**: is the corresponding size of the product in Bytes.
- **Product/Message**: provides the name of the product

6.1.2 OUTTRAY: LAN FORWARDED

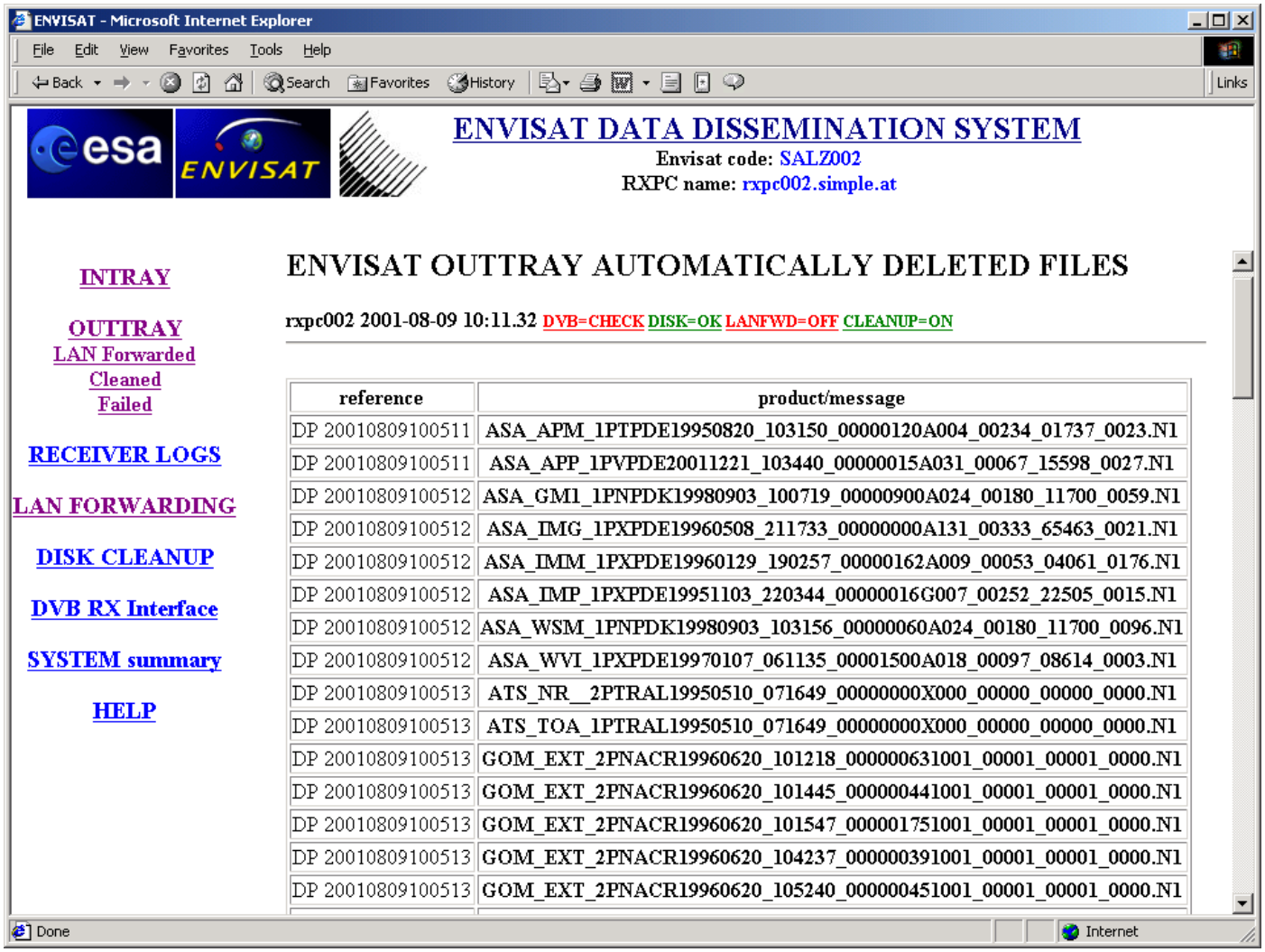
Click **LAN Forwarded** to get a list of the latest **100** successfully forwarded products from the RX-PC toward the final User destination system. The listed products may be either been already removed from the hard disk (written in italics), or still on the disk (if the deletion was not activated, or the file retransmitted).



The table displays two columns:
Reference: channel from which the product has been received, and timestamp of the forward event (YYYYMMDDHHMMSS).
Product: is the name and link to the product if it is still locally stored.

6.1.3 OUTTRAY: CLEANED

Click **Cleaned** to get a list of the latest **100** cleaned products.



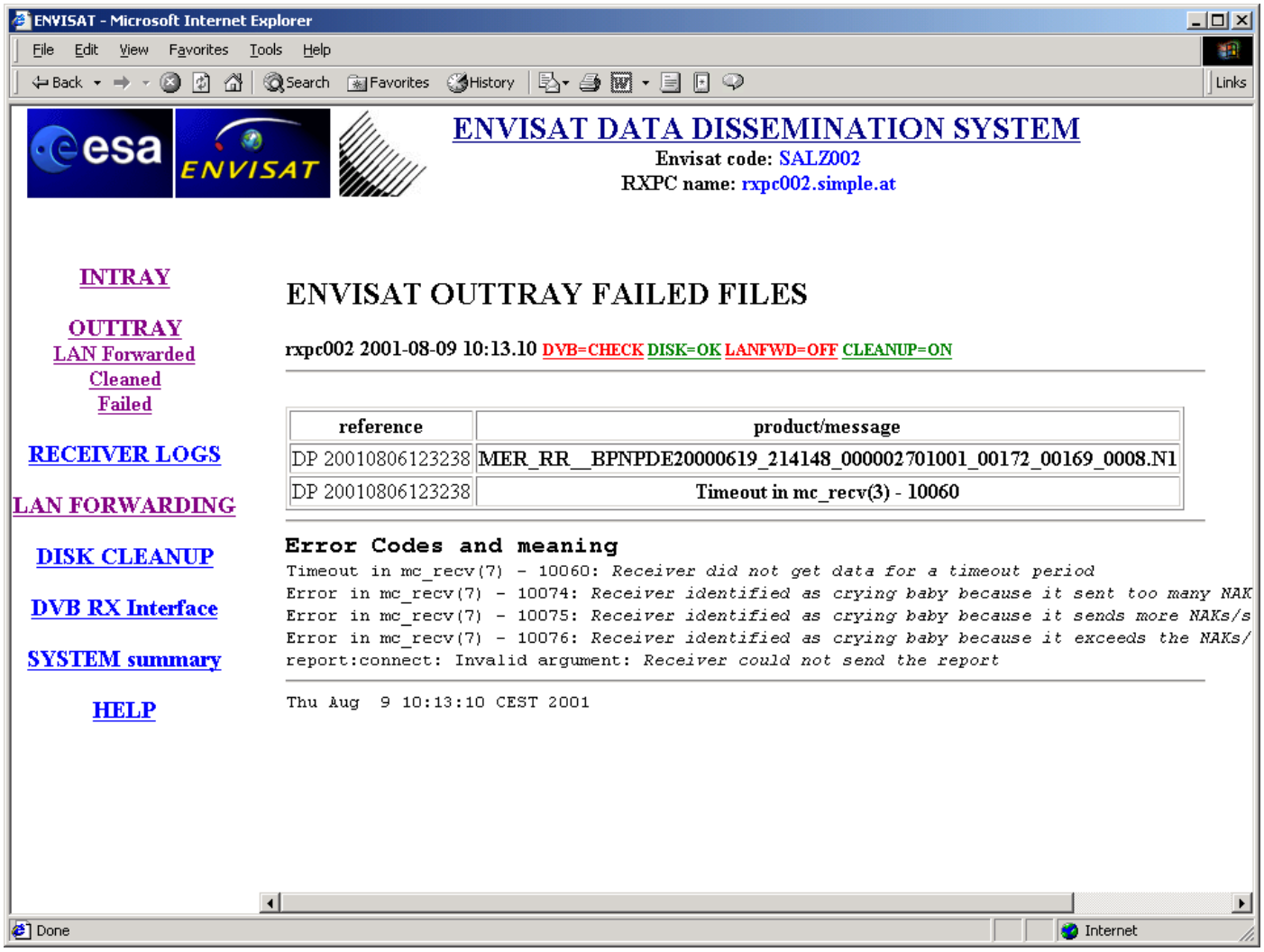
The table displays two columns:

Reference: channel from which the product has been received, and timestamp of the deletion event (YYYYMMDDHHMMSS).

Product: is the name and the deleted product.

6.1.4 OUTTRAY: CLEANED

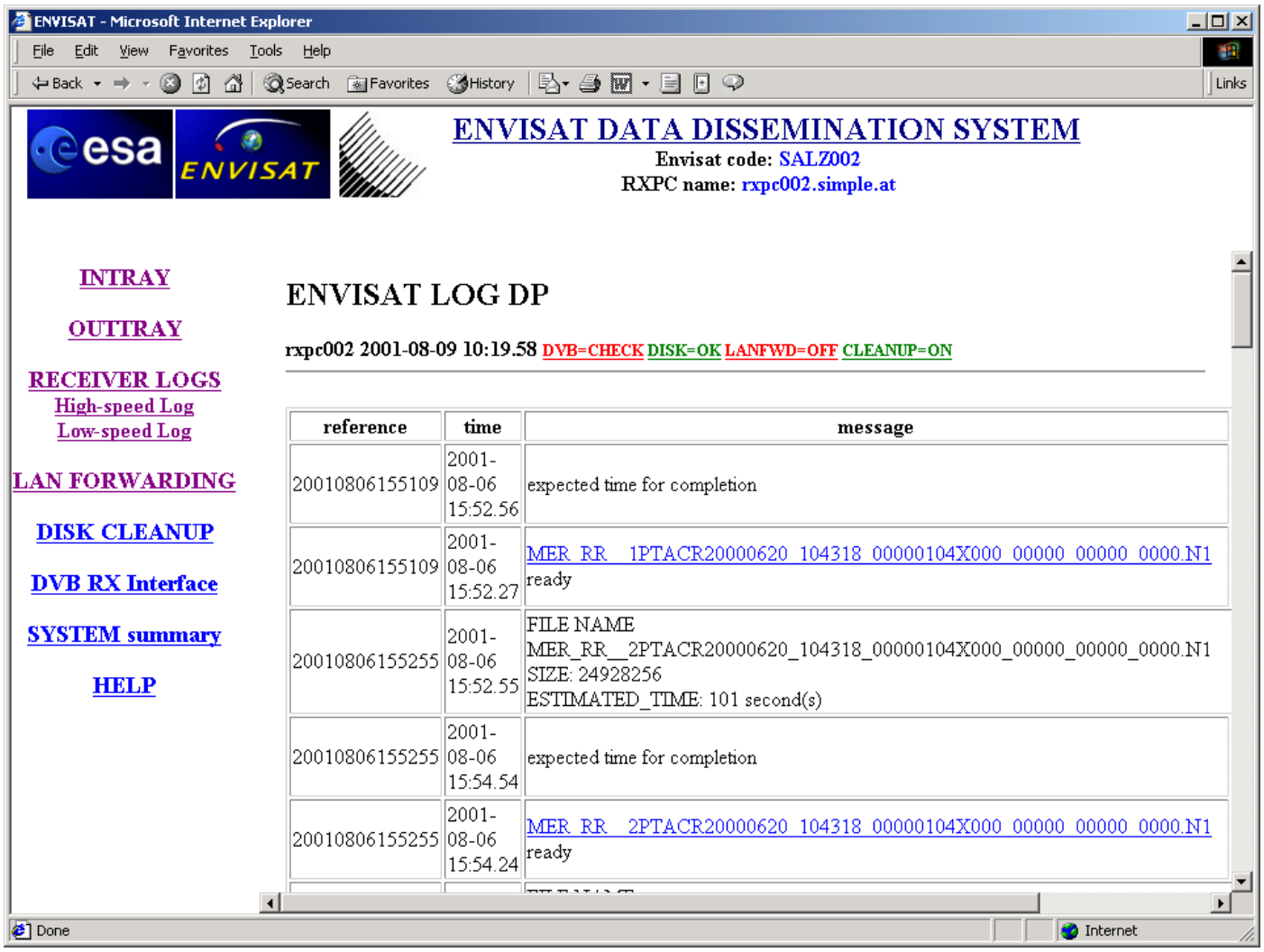
Click **Failed** to get a list of the latest **100** failed products. An error code for any of the envisaged reasons for reception failure is provided:


ENVISAT - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History Links
ENVISAT DATA DISSEMINATION SYSTEM
Envisat code: SALZ002
RXPC name: rxpc002.simple.at
INTRAY
OUTTRAY
LAN Forwarded
Cleaned
Failed
RECEIVER LOGS
LAN FORWARDING
DISK CLEANUP
DVB RX Interface
SYSTEM summary
HELP
ENVISAT OUTTRAY FAILED FILES
rxpc002 2001-08-09 10:13.10 DVB=CHECK DISK=OK LANFWD=OFF CLEANUP=ON
reference
product/message
DP 20010806123238
MER_RR__BPNPDE20000619_214148_000002701001_00172_00169_0008.N1
DP 20010806123238
Timeout in mc_recv(3) - 10060
Error Codes and meaning
Timeout in mc_recv(7) - 10060: Receiver did not get data for a timeout period
Error in mc_recv(7) - 10074: Receiver identified as crying baby because it sent too many NAK
Error in mc_recv(7) - 10075: Receiver identified as crying baby because it sends more NAKs/s
Error in mc_recv(7) - 10076: Receiver identified as crying baby because it exceeds the NAKs/
report:connect: Invalid argument: Receiver could not send the report
Thu Aug 9 10:13:10 CEST 2001
Done
Internet

NOTE that the corresponding error codes and their meaning are displayed at the end of the page.

6.1.5 RECEIVER LOGS: HIGH-SPEED (DP) AND LOW-SPEED (DB) LOGS

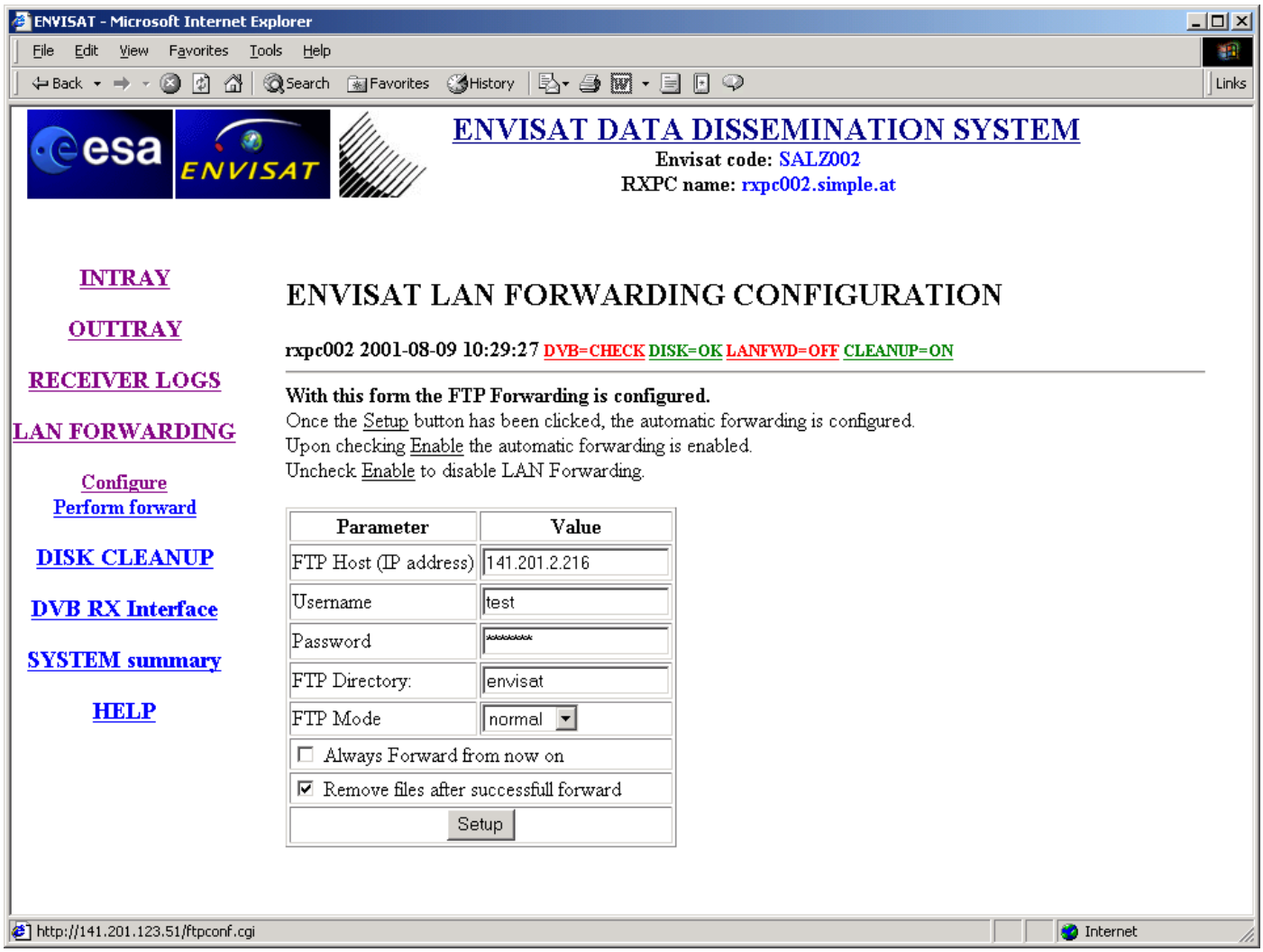
Click **High-speed Log** to obtain the last **TBD** status messages for the high-speed channel. An entirely similar page may be obtained clicking **Low-speed Log** .



The first data line in the table says the following: with reference to 20010806155109 the product will be ready.
The second line tells that with reference 20010328110029 at 2001-08-06 15:52:27 the product MER_RR__1PTACR…. is **ready** to be downloaded. The product name "MER_RR__1PTACR." is underlined and the User may immediately download the corresponding product in clicking on this link.
The third line indicates a new product arriving with reference 20010806155255 and some more details.
NOTE that three consecutive rows on the table, logically belong together: in the above example this are table data lines 3,4,5.

6.1.6 LAN FORWARDING: CONFIGURE

Click **Configure** to set up the parameters necessary to perform LAN forwarding

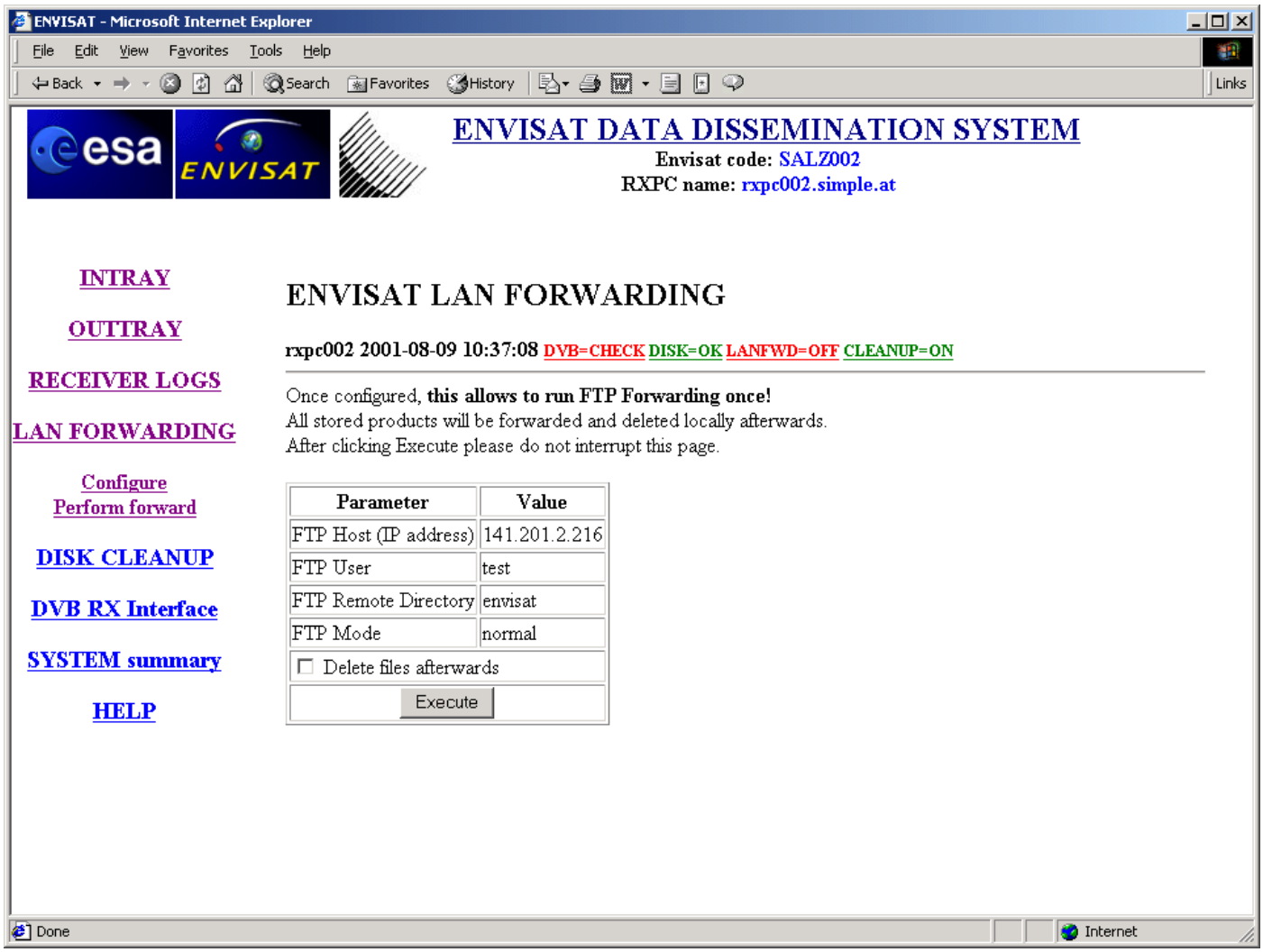


Please provide correct information for:
FTP Host (IP address): do not use a hostname or fully qualified host name here
Username: must be non-empty and valid
Password: must be non-empty and correct
FTP Directory: can be empty or must be an existing subdirectory on the FTP Host
FTP Mode: normal or passive mode (sometimes required with firewalls)
Always Forward from now on: check to enable
Remove files after successful forward: enable to remove files locally

NOTE that the forwarding can be activated only for new arrivals but not during an on-going transmission for that product.

6.1.7 LAN FORWARDING: PERFORM MANUAL FORWARD

Click **Perform forward** to forward immediately all products locally stored.

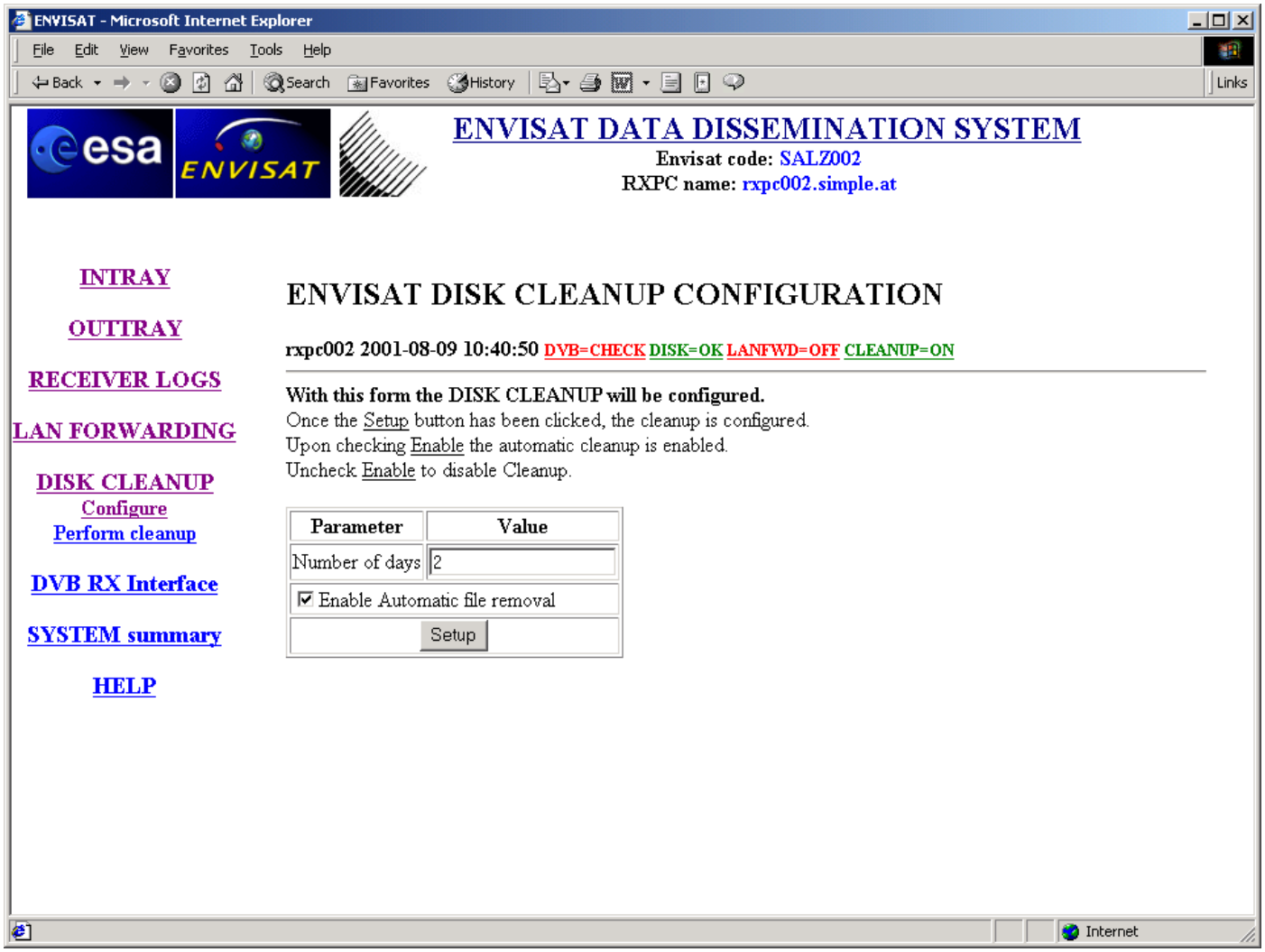


Upon clicking Execute all products will be forwarded to the FTP host with corresponding log-on details. Successfully forwarded products can be removed in checking the “Delete files afterwards” box.

NOTE: After successful configuration and automatic forwarding files are always immediately deleted and do no longer reside on the local harddisk!

6.1.8 DISK CLEANUP: CONFIGURE

Click **Configure** to set up the parameters for automatic disk cleanup.

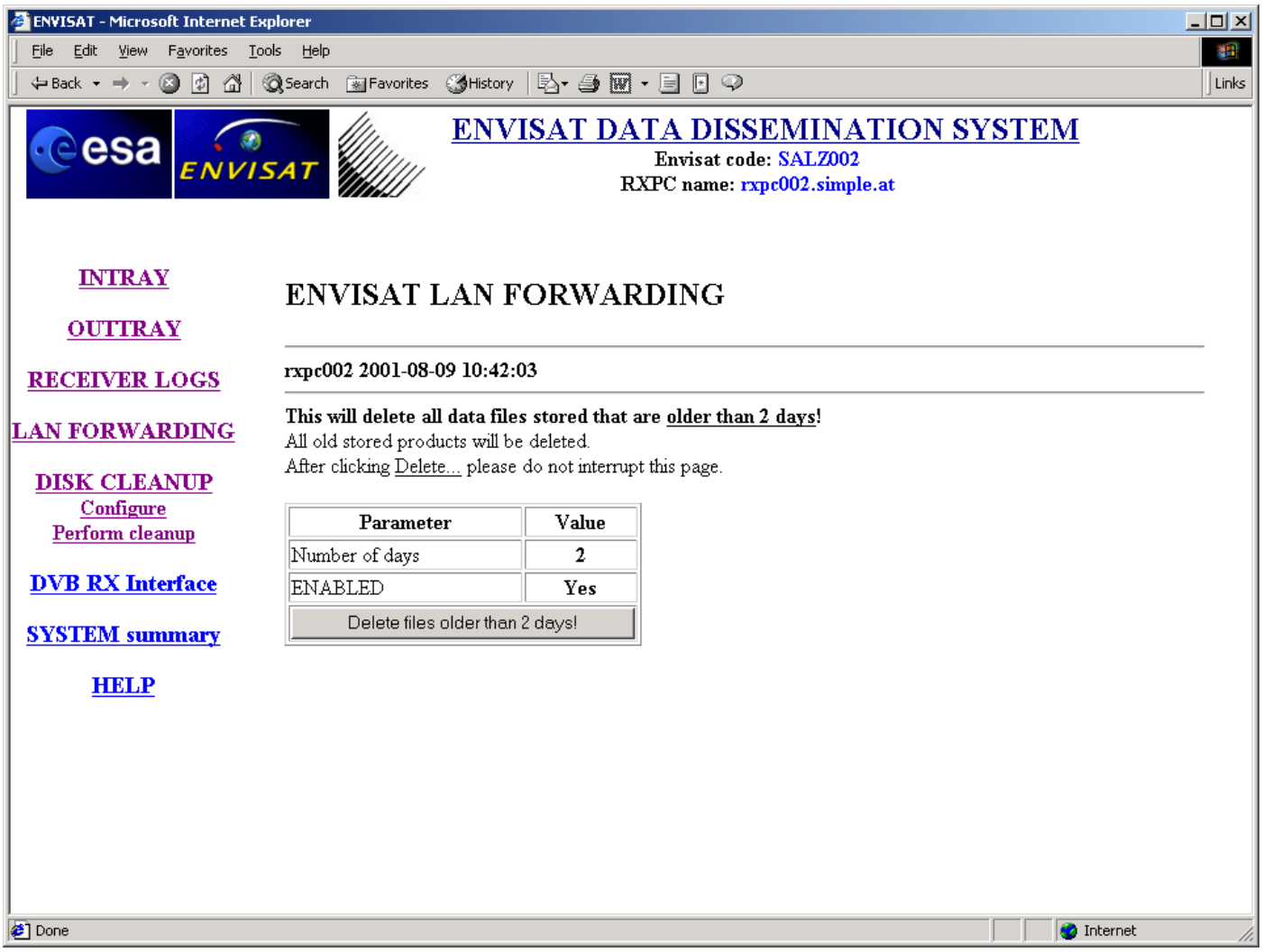


The User shall input the number of days after which products may be deleted. This shall be selected by the user in order to keep enough space on the hard disk for future incoming products.

NOTE: Once programmed, the first clean-up will be performed after the given time is elapsed.

6.1.9 DISK CLEANUP: PERFORM MANUAL CLEANUP

Click **Perform cleanup** to remove immediately all products older than Number of days.

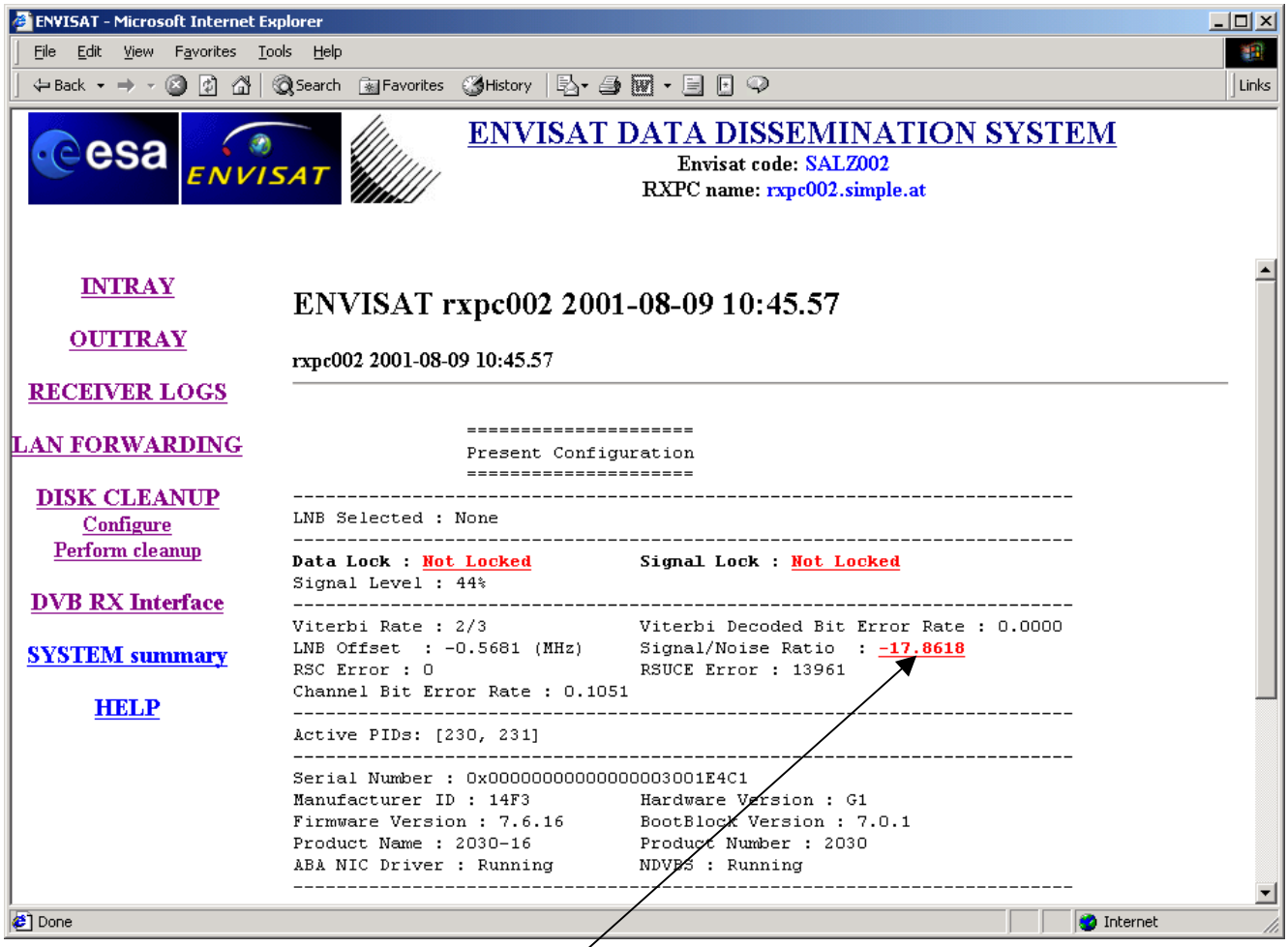


The two parameters which have been set in the “configure” screen, are shown again for reference:
Number of days: the selected threshold for file persistence on hard disk.
Enabled: if disc configuration is currently enabled or not.

NOTE: there is no undo function, if deletion is wrongly activated. The Users are warned to use this command only after careful verification that none of the ageing files on disk must be kept or forwarded.

6.1.10 DVB RX INTERFACE: STATUS

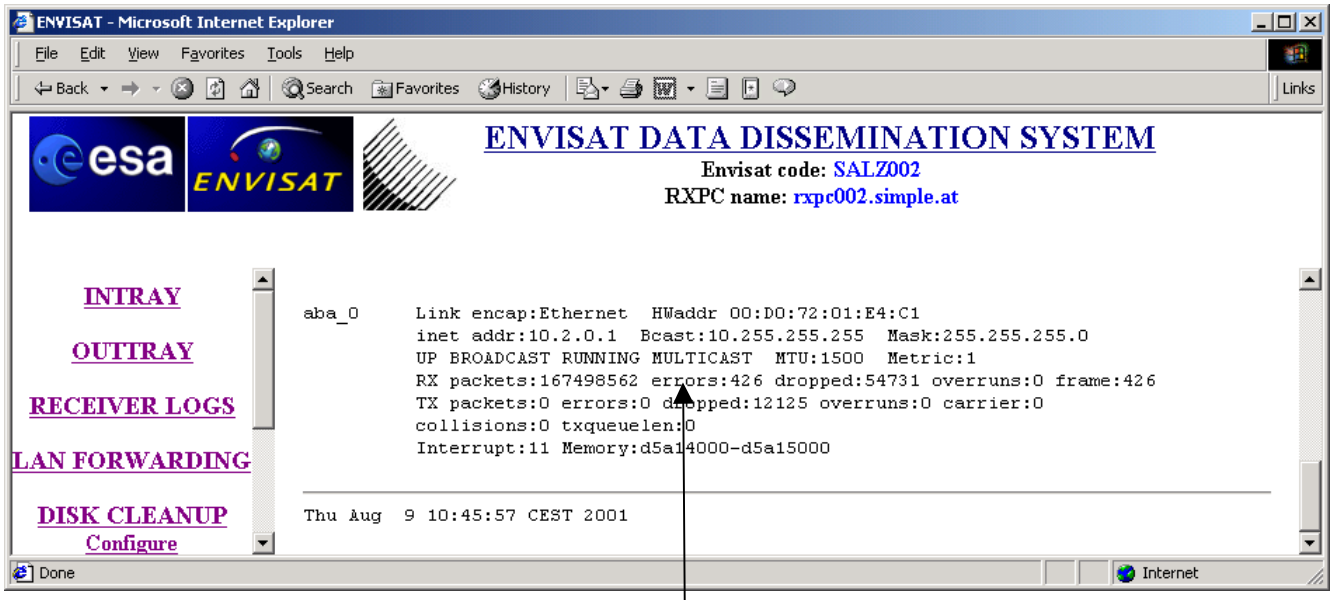
Click **DVB RX Interface** to obtain the status of the integrated receiver/decoder.



Specifically look for **Signal/Noise Ratio**. It should be between 4 and 8 depending on weather and outdoor conditions.

If the value is negative, please immediately take actions as indicated in chapter “Troubleshooting”.

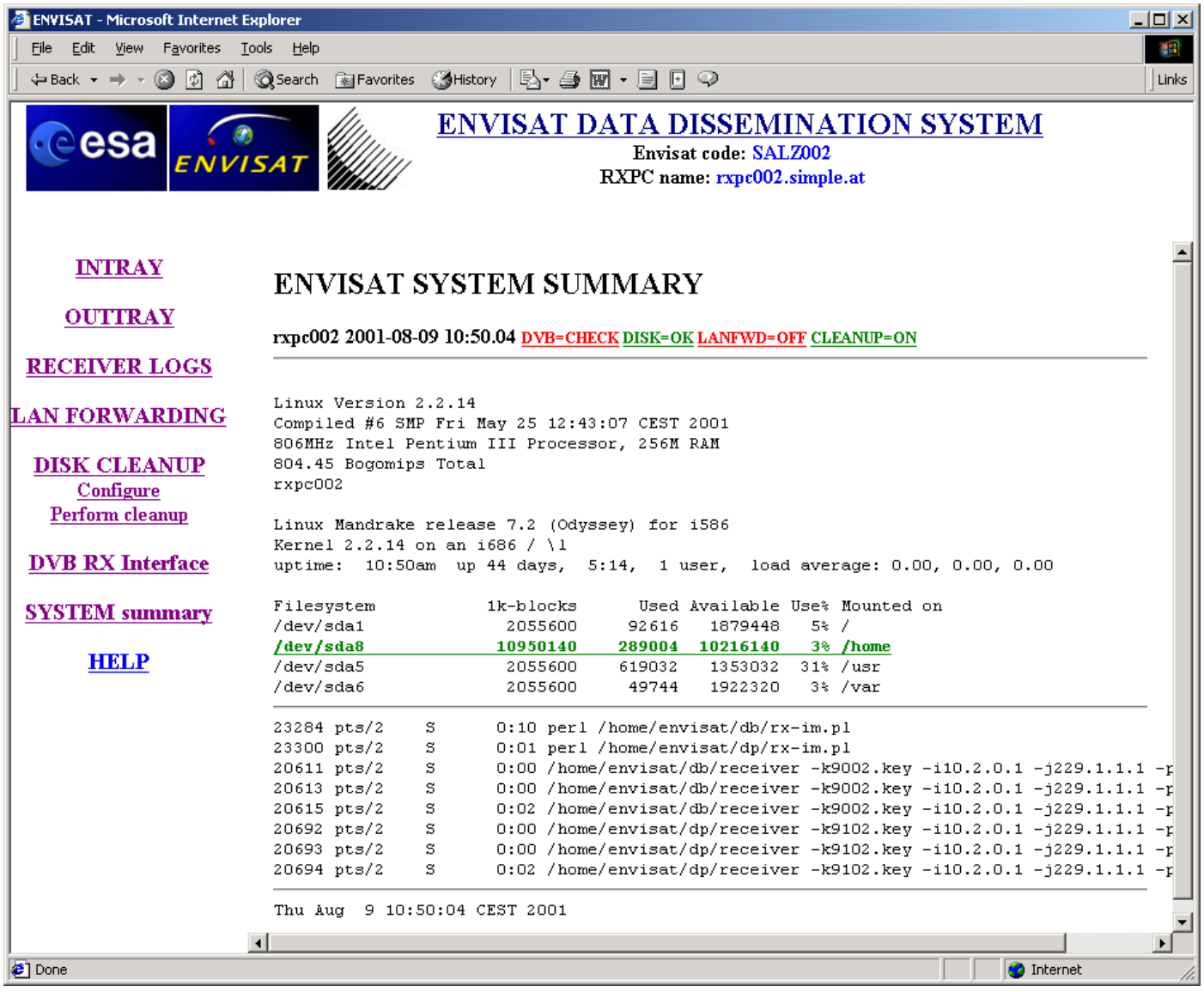
The additional information about the DVB interface provides a summary of DVB packets received via this interface.



Most of these numbers are useful for system debugging. The user should just verify that during normal operations the number of **errors** should be reasonable small compared to the number of RX packets.

6.1.11 GENERAL: SYSTEM SUMMARY

Click **System summary** to obtain the list of files-systems and necessary processes.


ENVISAT - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History Links
ENVISAT DATA DISSEMINATION SYSTEM
Envisat code: SALZ002
RXPC name: rxpc002.simple.at
INTRAY
OUTTRAY
RECEIVER LOGS
LAN FORWARDING
DISK CLEANUP
Configure
Perform cleanup
DVB RX Interface
SYSTEM summary
HELP
ENVISAT SYSTEM SUMMARY
rxpc002 2001-08-09 10:50.04 DVB=CHECK DISK=OK LANFWD=OFF CLEANUP=ON
Linux Version 2.2.14
Compiled #6 SMP Fri May 25 12:43:07 CEST 2001
806MHz Intel Pentium III Processor, 256M RAM
804.45 Bogomips Total
rxpc002
Linux Mandrake release 7.2 (Odyssey) for i586
Kernel 2.2.14 on an i686 / \l
uptime: 10:50am up 44 days, 5:14, 1 user, load average: 0.00, 0.00, 0.00
Filesystem 1k-blocks Used Available Use% Mounted on
/dev/sda1 2055600 92616 1879448 5% /
/dev/sda8 10950140 289004 10216140 3% /home
/dev/sda5 2055600 619032 1353032 31% /usr
/dev/sda6 2055600 49744 1922320 3% /var
23284 pts/2 S 0:10 perl /home/envisat/db/rx-im.pl
23300 pts/2 S 0:01 perl /home/envisat/dp/rx-im.pl
20611 pts/2 S 0:00 /home/envisat/db/receiver -k9002.key -i10.2.0.1 -j229.1.1.1 -p
20613 pts/2 S 0:00 /home/envisat/db/receiver -k9002.key -i10.2.0.1 -j229.1.1.1 -p
20615 pts/2 S 0:02 /home/envisat/db/receiver -k9002.key -i10.2.0.1 -j229.1.1.1 -p
20692 pts/2 S 0:00 /home/envisat/dp/receiver -k9102.key -i10.2.0.1 -j229.1.1.1 -p
20693 pts/2 S 0:00 /home/envisat/dp/receiver -k9102.key -i10.2.0.1 -j229.1.1.1 -p
20694 pts/2 S 0:02 /home/envisat/dp/receiver -k9102.key -i10.2.0.1 -j229.1.1.1 -p
Thu Aug 9 10:50:04 CEST 2001
Done
Internet

The line starting with **uptime:** tells you the time since when the system, is up and running. If for any reason this does not correspond with the time the system was delivered and taken into operation, it indicates a severe malfunction or power loss. In this case, please notify the HelpDesk!

The lines below **Filesystem** indicate the free space on RX-PC.
The column **Use%** should always be below 90% to guarantee optimal performance.

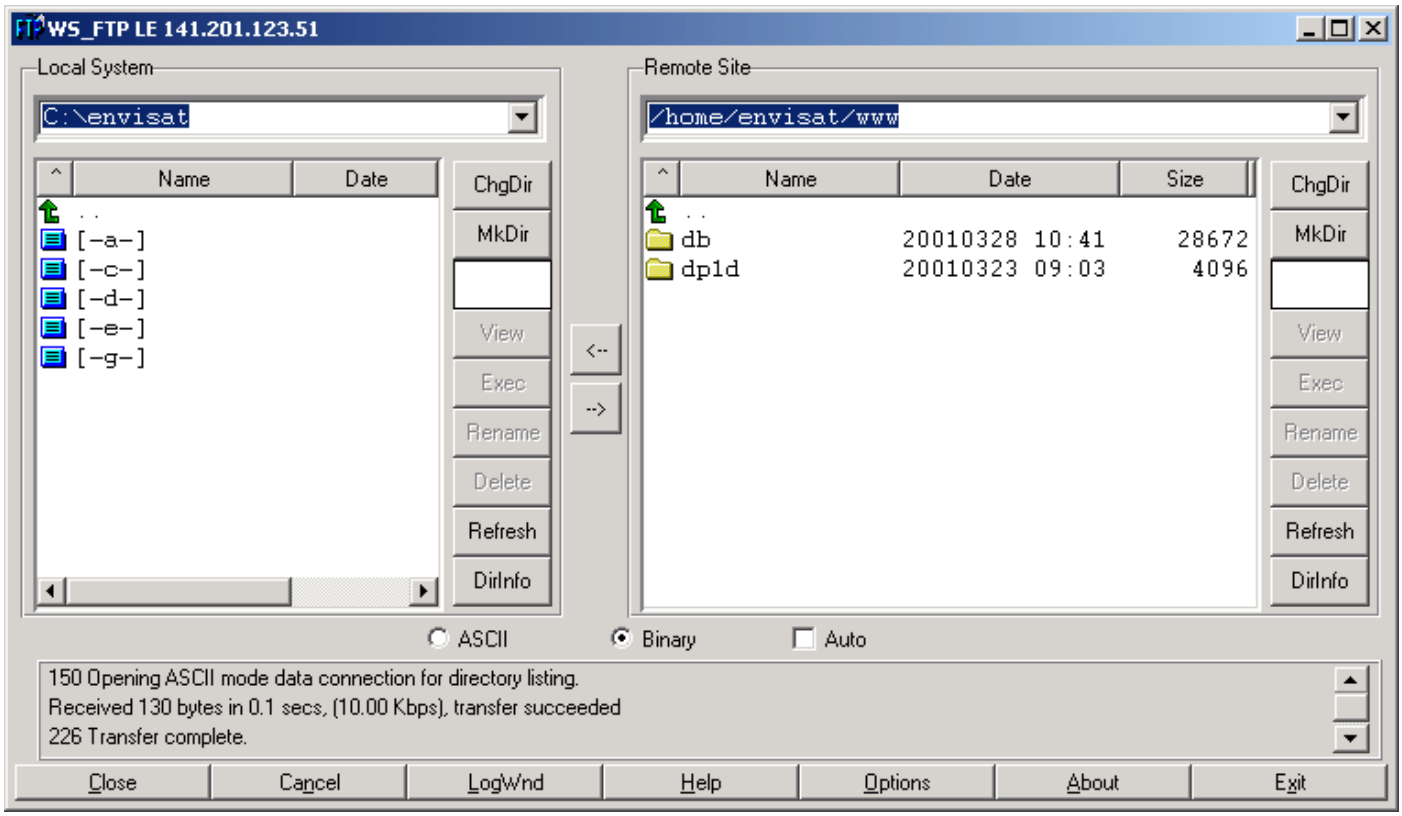
The green underlined lines indicate the RX intray directory where the products are stored.

6.2 FTP

In addition to the LAN forwarding utility which has been described in chapter 7.1.6, two other ways to transfer data products from the receiver to a remote host are possible. These are described in the following.

6.2.1 FTP-GET (MANAGE PRODUCTS FROM REMOTE HOST)

Connect with your preferred FTP programme to RX-PC. In this example WS_FTP LE is used.

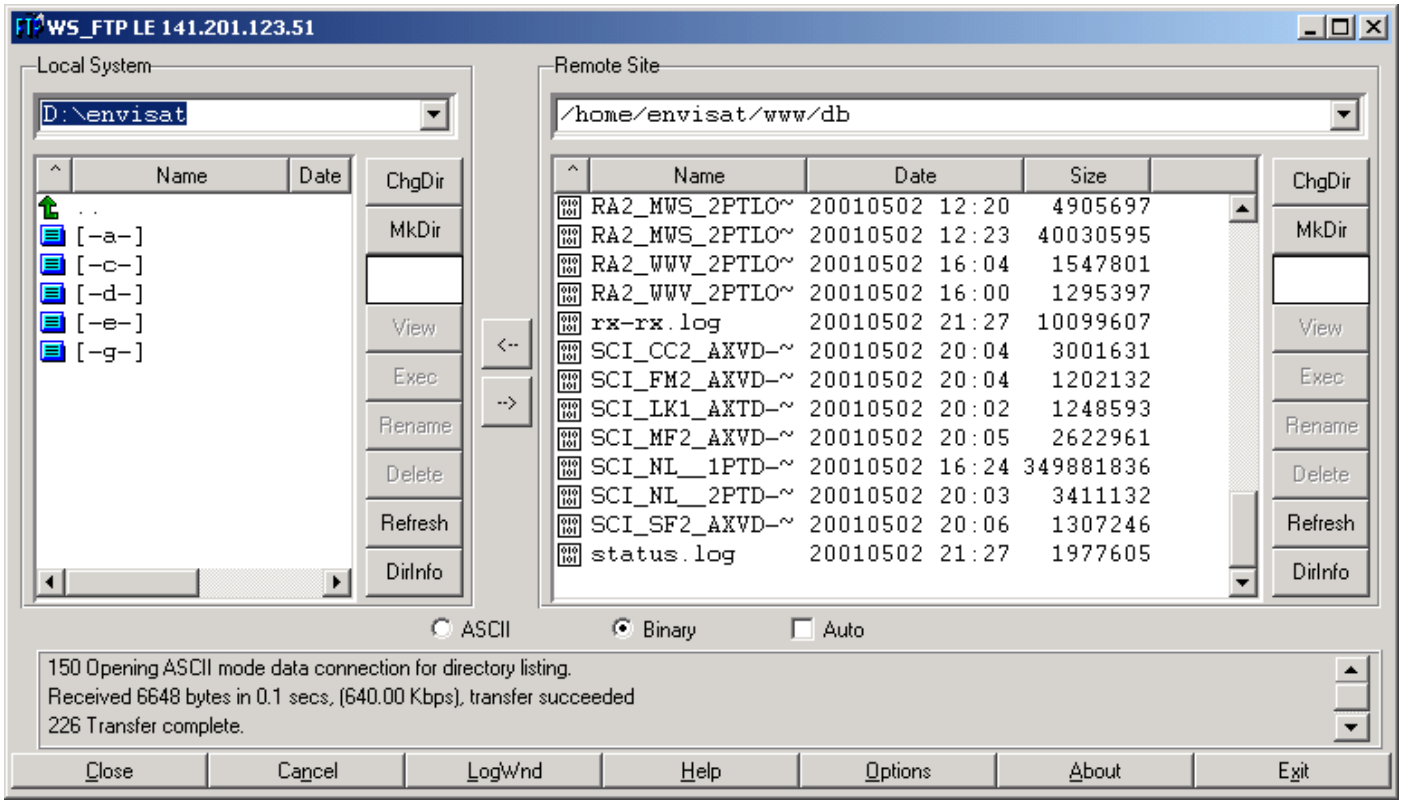


On your target machine (from where you connect to RX-PC) you may have a subdirectory envisat. Please make sure, that you have enough free disk space on your machine. You may also have a CD_Writer in that machine, so that you can make CD copies of the products.

After connecting to RX-PC, again you see the subdirectories holding the respective services. Currently one for the low-rate DB channel and one for high-rate DP channel.

Note that you cannot access any other elements in the file system than products.

In order to pick a product transferred on the DB channel, go to the db subdirectory.



Products are typically have names in upper case. In the above example ASA_*, ATS_*, and GOM_* are those products.

Select (click) one or all of these and **download** them.

Afterwards you may want to **delete** those products already downloaded in selecting one or more and delete it. Note that the system keeps track of any download/delete action!

Please do not delete products unless you have already downloaded and saved them to a different location!

Three more files may be downloaded in order to **analyse problems**:
In order to obtain the full reception log, download the file **rx-rx.log**.
To obtain the full listing of all products received, download **files.log**.
To obtain the full status of all system notifications, download **status.log**.

These procedures may be implemented in an automatic way by a script, which would run under user responsibility on the remote host.

6.2.2 SECURE COPY (SCP-PUT)

In order to automatically forward products from RX-PC to another host (for example equipped with larger hard disks or CD writer), and in addition to the system configurable via the HTML page, another procedure is also made available to the user.

This process is envisaged for all those applications where the data transfer requires an high security level. It can be configured following the steps described below and it is based on a Secure Copy (SCP) file transfer. As for the FTP-get, the correct operation of the product forwarding itself shall be responsibility of the user.

The following steps are necessary to avoid manually typing the password for Secure Copy (scp):

- Log on to RXPC as user envisat.
- At the login prompt issue the command

```
> bash-2.04$ /usr/bin/ssh-keygen
```

which asks a number of question to be answered with RETURN:

```
Initializing random number generator...
Generating  p:     ..........................................................++
(distance 838)
Generating q:  ......................++ (distance 384)
Computing the keys...
Testing the keys...
Key generation complete.
Enter file in which to save the key (/home/envisat/www/.ssh/identity):
Enter passphrase:
Enter the same passphrase again:
Your identification has been saved in /home/envisat/www/.ssh/identity.
Your public key is:
1024                                                                    37
11834545516691241668050540616633735110326353372196239002108194674203729247861536 0
67311594706581464999302350163880626796852084753528472856202901120104641072148619 5
33491058163960841221310061151551110767866473133449439721425360466139023179838258 7
78568657013306738512540068180525628467003344472213998336399322905 9 envisat@rxpc01
Your public key has been saved in /home/envisat/www/.ssh/identity.pub
```

- Copy this identity key to the target host (XXX.XXX.XXX.XXX) for target user (for example envisat) using scp (this time you have still to provide the password!):

```
> bash-2.04$ scp .ssh/identity.pub envisat@XXX.XXX.XXX.XXX:.ssh/authorized_keys

Host key not found from the list of known hosts.
```

```
Are you sure you want to continue connecting (yes/no)? yes
Host 'XXX.XXX.XXX.XX' added to the list of known hosts.
envisat@XXX.XXX.XXX.XX's password:
identity.pub              |          0 KB |   0.3 kB/s | ETA: 00:00:00 | 100%
```

- Repeat this step to see whether the auto-logon works:

```
> bash-2.04$ scp .ssh/identity.pub envisat@XXX.XXX.XXX.XXX:.ssh/authorized_keys

identity.pub              |          0 KB |   0.3 kB/s | ETA: 00:00:00 | 100%
```

- If everything went well, all products can be transferred and afterwards removed:

```
> bash-2.04$ /usr/bin/scp db/*.N1 envisat@XXX.XXX.XXX.XXX:.
> bash-2.04$ /bin/rm -f db/*.N1
```

- These commands can then be applied to dp1d (replace db with dp1d) as well and can be put into a shell program, which can be invoked by a cron regularly.

6.3 DISK SPACE PROTECTION/CLEANUP.

DDS system is based on the assumption that it is user responsibility to keep enough space in the RX-PC disk to receive data. The RX-PC acts as temporary file repository system for the host where the products will be processed and used further. It receives files via the satellite interface and stores them on a disk ready, to be picked up by the user via the two available interfaces (HTTP and FTP-get). Due to the nature of the service, it is assumed that real time disseminated data should be used almost immediately by the user and therefore its persistence on the RX-PC should be minimal. In addition, any saturation of the disk space would prevent newer products to be received.

Therefore, in order to have always enough disk space to receive incoming products, the RX-PC has an automatic procedure to delete products, when disk space exceeds a given treshold. **This procedure is not activated by default!** It is assumed that the importance of the products is such, that users do want them definitely.

- If, however, products are not downloaded and subsequently removed by the User, the Envisat Monitoring system will get an alarm (default 90%) and may be forced to enable this procedure.
- If, for any reason the User requests this procedure to be activated, it will be.

7 ON-SITE MAINTENANCE

7.1 User tasks

In order to keep the receiving system in the nominal configuration status, the User should regularly perform the following tasks:

NR	Frequency	Task	Pass Criteria
1	Daily	Web: DVB RX Interface -> Status	S/N in range
2	Daily	Web: GENERAL -> Status	File system in range
3	Daily	Web: INTRAY	No errors
4	Daily	FTP download of products	Enough disk space

The performance of above tasks takes less than a couple of minutes, except for the FTP download of products.

The performance of such tasks is mandatory for reliable operation of RXPC.

Should any of the previous check result to fail, the user should immediately refer to the DDS assistance (HelpDesk) as described in chapters 8 and 9.

8 REMOTE MAINTENANCE

The DDS takes care about remote monitoring, operations and configuration control.

Essentially remote connect via SSH and polling/trapping via SNMP are used to perform maintenance tasks and monitor essential status and functional status.

No User interaction is foreseen for this part of operations.

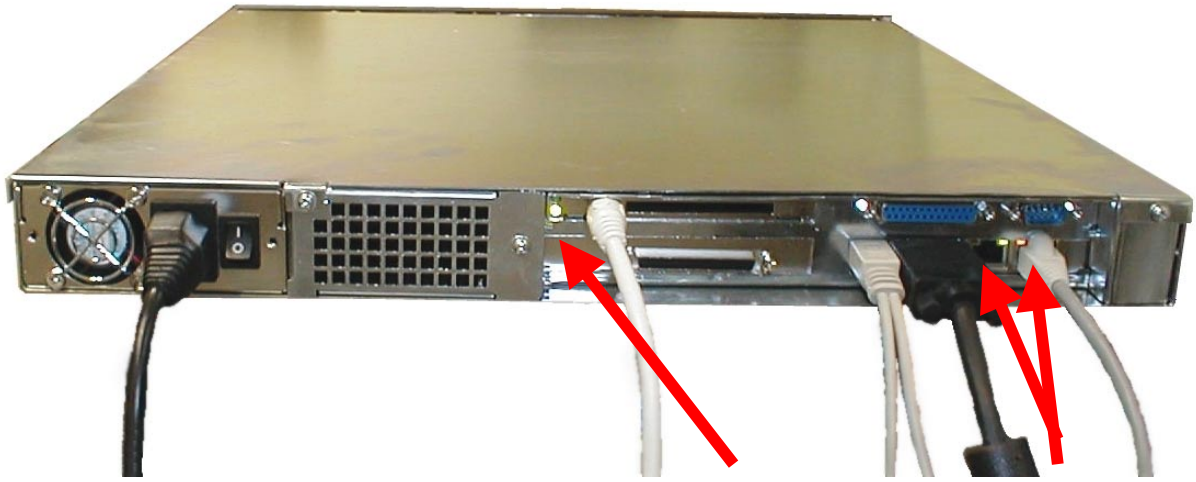
9 TROUBLESHOOTING

In any abnormal condition, the user shall not perform any hard reboot of the system (OFF-ON), unless explicitly requested by the DDS HelpDesk maintenance team.

In case the user should believe that an expected product has not been delivered, he may follow the troubleshooting procedures in order to verify the RX station status and to collect data for maintenance actions.

9.1 Station ON

As a first thing the user should verify that the RX-PC is switched ON and reachable via the local LAN connection. Please check with a Web browser and FTP client that RX-PC is accessible.



At the rear side of RX-PC you see LEDs on the **Broadlogic DVB** receiver and **two LAN** cards.

Both LEDs of the **Broadlogic DVB** receiver should always be **GREEN**. This indicates, that both the card is initialised and the satellite reception is in good shape. If, for any reason, one or both LEDs are blinking, the satellite reception is disturbed. Please proceed to the DVB card operation to learn how to deal with this.

The **right hand LAN** connector should have the twisted pair 10/100 Mbit Category 5 cable properly connected and on this connector the LED should be **GREEN**. Typically the other LED will blink **ORANGE** whenever traffic is on the LAN (in a normal LAN this is nearly always the case). If not activity of the ORANGE LED is visible, even when pinging the RX-PC from a remote computer, this indicates either a hardware defect (cable, switch/hub, card) or a software configuration problem of that interface.

9.2 DVB Card operation

Verify that RX-PC BL2030-16 is locked, and signal strength and error ratio are in line with the normal clear sky operational values which are S/N around 7dB and channel BER around 0.009.

These values can be verified checking the output of **DVB RX Interface -> Status** at the RX-PC service home page (see chapter 7.1.10).

The HTTP page should be loaded several times at a distance of 10 minutes as the operation may coincide with one uplink station hand-over, when no carrier is available over the transponder. Collect all the values, disregard the maximum and minimum, and average the others taking also note of the external weather conditions (i.e. clear sky, cloudy, rainy, severe gale).

If the station is permanently in "no-lock" status then the user should first verify that the RF cable is properly connected to the F-connector in the rear panel on one side and to the LNB/antenna on the other side. Should the card result instead permanently in signal and data lock status, then the user should proceed with the additional verification of next chapters.

9.3 Examination of LOGFILES

Download the files **rx-rx.log** and **files.log** via FTP file from the respective service subdirectory. In the following, two potential problems are explained in more detail.

9.3.1 INTERNET CONNECTION PROBLEM

The output looks similar to this:

```
keyfile.20010328110934:2001-03-28 11:23.17: RRMP version 3.2.3 loaded
keyfile.20010328110934:2001-03-28 11:23.17: Using interface 10.2.0.1 to receive data from 229.1.1.1
keyfile.20010328110934:2001-03-28 11:23.17: Able to receive encrypted files with key:
keys/keyfile.20010328110934
keyfile.20010328110934:2001-03-28 11:23.17: filter: -- accepted:
ASA_GM__BPZPDE20000619_223807_00000900A001_00173_00170_0003.N1
keyfile.20010328110934:2001-03-28 11:23.17: End of transmission
keyfile.20010328110934:2001-03-28 11:23.17: Replying report to 193.204.235.88, port 10011
keyfile.20010328110934:2001-03-28 11:23.17: report:connect: Invalid argument
keyfile.20010328110934:2001-03-28 11:23.17: Cannot open client socket to report back to the sender
keyfile.20010328110934:2001-03-28 11:23.17: ABORTED
```

The lines in bold mean that the RX-PC, at the end of a product dissemination, could not send the related dissemination report to DDS. The user should immediately inform the DDS HelpDesk.

9.3.2 RECEPTION PROBLEM

The output looks similar to this:

```
keyfile.20010326143917:2001-03-26 14:39.20: RRMP version 3.2.3 loaded
keyfile.20010326143917:2001-03-26 14:39.20: Using interface 10.2.0.1 to receive data from 229.1.1.1
keyfile.20010326143917:2001-03-26 14:39.20: Able to receive encrypted files with key:
keys/keyfile.20010326143917
keyfile.20010326143917:2001-03-26 14:39.20: filter: -- accepted:
GOM_RR__2PNPDE20000619_201855_00000074A001_00171_00168_0000.N1
keyfile.20010326143917:2001-03-26 14:39.20: config: RRMP configuration for Envisat
keyfile.20010326143917:2001-03-26 14:39.20: Reading encryption key from file
keys/keyfile.20010326143917
keyfile.20010326143917:2001-03-26 14:39.20: 1010326143918, 985610358, 0,
GOM_RR__2PNPDE20000619_201855_00000074A001_00171_00168_0000.N1 ()
keyfile.20010326143917:2001-03-26 14:39.20: Error in mc_recv(7) - 10075
keyfile.20010326143917:2001-03-26 14:39.20: receiver identified as crying baby because it exceeds
max NAKs per second - exiting
keyfile.20010326143917:2001-03-26 14:39.28: ABORTED
```

The lines in bold say, that due to reception problems (max NAKs per second exceeds threshold) the reception was aborted.

Potential other reasons for failed product dissemination are:

- percentage of NAK per product exceeded
- max NAKs exceeded

In any case check whether cabling is ok and antenna is in good shape. Cross check with the Status of DVB RX Interface.

9.4 SAMPLE Problem Report

This is the preliminary proposed form for the problem reporting to be sent electronically to the DDS HelpDesk:

ESRIN EOhelp (Working hours 08:30-17:15)
Tel: +39-06-94108777
Fax: +39-06-94108272
E-mail: eohelp@esa.int

SITE-NAME:	
Person:	
Tel:	
E-mail:	
Date/Time:	
Description of the problem:	